U. S. Steel
Gary Works
One North Broadway
Gary, IN 46402-3199

March 21, 2000

Mr. John Madera
Chief, Materials Inspection Branch I
United States Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

SUBJECT: Summary of Event # 36725 - Incident Involving a NDS 200 Gauge on February 25, 2000

On February 25, 2000 at East Galvanize #6 Line, an incident occurred involving an NDS Model 200 Nuclear Gauge, serial # 2061B. The gauge contains 2.001 curies of Americium 241. This gauge is licensed to Valmet Automation of Norcross, Georgia, under General License # GA 458-3G. This model gauge is designed to measure the thickness of galvanized coating on steel. It contains two 1000 mCi sources and a single 1 mCi check source. The gauge is mounted on a track that allows the housing to be moved into the line, or parked along the side of the line. The East Galvanize #6 Line applies a galvanized coating to light gauge steel strip. Coils of the steel are fed through the line in a continuous strip.

At approximately 1:55 AM on February 25, 2000, the strip being processed misfed through the line, ran off-center and "piled-up" causing a part of the strip to strike the NDS Gauge, knocking it from its mounting. The line was shut-down and the gauge dropped about a foot and came to rest on the mezzanine floor beside the line. The strip pulled most of the wire connections from the gauge. The unit's shutter mechanism is a failsafe design that closes if energy to the unit is lost. The shutter closed completely when the incident occurred.

Plant Security responded to secure the area. The Shift Manager contacted Mr. B. W. Kunkle of US Steel Safety and Industrial Hygiene, and Mr. Glenn Huber of Stan A. Huber Consultants to assist in testing the gauge to ensure the shutter was closed and conduct wipe testing. Mr. Kunkle surveyed the areas around the gauge, and at the surface of the gauge housing at approximately 4:00 AM. Readings were 0.02 mR/hr or less. It was clear that the shutter was closed. Mr. Huber collected a wipe test from the surface of the gauge at approximately 5:00 AM, and also conducted a survey of the area, with similar results (see attached report).

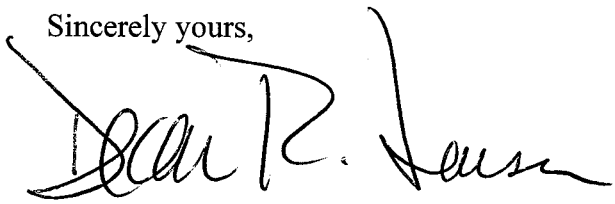
Steel the recycled material

Employees were kept at a safe distance from the gauge while Mr. Huber returned to the laboratory to analyze the wipe sample. Employees were instructed that they must leave the gauge as it was until wipe test results were received. At approximately 8:00 AM, Mr. Huber of Stan A. Huber Consultants reported that the wipe sample showed no leakage of nuclear material. A verbal report was made to the NRC at 8:15 AM CST, or 9:15 AM EST at (301) 816-5100. The report was logged as Event #36725.

This is not the first event with this gauge. Similar events occurred in May of 1997, October of 1998, and August of 1999. After the first incident, we installed a laser-controlled strip monitor, designed to send a message to recall the head from the mill when an impending problem with strip tracking is noted. When another incident occurred in 1998, the problem was attributed to the laser system being turned-off, so we added an alarm to signal when the system is turned-off. Following the incident in 1999, which was attributed to insufficient speed of the recall mechanism, a "fast recall" system was installed to bring the head out of the path of the strip more quickly when a problem was detected. Since the fast recall system still allowed the gauge to be damaged in this incident, we have now installed a physical barrier to further reduce the probability of a future event. We feel that the physical barrier, together with the upgraded laser-controlled head recall system, will provide adequate protection against damage to the NDS Gauge.

I can be contacted at (219) 888-4901 if you need additional information.

Sincerely yours,



Dean R. Larson Ph.D. CSP CEM
Radiation Safety Officer
Department Manager
Safety & Industrial Hygiene

cc: T. Cera
D. C. Rizer, Jr.
G. E. Human
M. C. Barnes
J. L. Kettle
B. W. Kunkle

Stan A. Huber Consultants, Inc.
Health Physics and Radiation Safety Services

200 North Cedar Road - New Lenox, Illinois 60451-1751 - (800) 383-0468 or (815) 485-6161 - FAX (815) 485-4433 - Email sahci@aol.com - Home Page www.sahci.com

February 25, 2000

COPY

Dean Larson, RSO
Manager, Safety and Industrial Hygiene
U.S.S. Gary Works
1 North Broadway
Mail Station 91E2
Gary, Indiana 46402

RE: Emergency Response Call to East Galvanize #6 Line on February 25, 2000

Dear Mr. Larson:

Stan A. Huber Consultants received an emergency response call from your facility at approximately 3:30am on the morning of February 25, 2000. I was informed that there had been an incident involving a nuclear gauge on the #6 line at East Galvanize. I arrived at U.S.S. Gary Works at 4:30am and met with Brian Kunkle and Jerry Kettle to discuss the incident.

An NDS Model 200 (serial # 2061B, 2.001 Ci Am-241) nuclear gauge had been knocked off of its track while operating on the #6 line. My initial surveys of the work area (5-10 feet from gauge) showed no elevated exposure rates (less than 0.02 mR/hr) and there was no visible damage to the source housing except that that the wiring had been pulled from the gauge and that the mylar window had been pierced.

I then performed a detailed survey of the gauge using a Ludlum Model 14C G-M survey meter with attached pancake probe. This meter was used to find any excessive exposure rates or possible breaches in the source housing. The maximum exposure rate using the pancake probe G-M meter was 1.8 mR/hr at the surface (0.2 mR/hr @ 1 foot. In order to accurately assess the exposure rate from the gauge, I performed a survey using an Eberline RO-2 Ion Chamber. Unlike the G-M detector, the ion chamber is not energy dependent and is capable of reading a true exposure rate in air. The maximum exposure rate using the ion chamber was 1.6 mR/hr at the surface. See attached "Nuclear Gauge Survey Form".

After performing the survey, I took several removable contamination wipes of the surrounding areas including the roll, the floor next to the gauge, and the gauge

mounting. I checked these wipes using the Ludlum 14C G-M meter and found that there was no evidence of gross contamination.

I also performed a leak test of the gauge and analyzed the wipes on a Packard Auto-Gamma Scintillation Spectrometer. Removable contamination was less than 0.005 uCi. The source is not leaking at this time. See attached leak test certificate.

The Gary Works "Emergency Procedure for a Damaged Radiation Gauge" was followed properly. The gauge may now be placed back into service since the gauge is not leaking and all exposure rates are within applicable limits.

Thank you for your assistance in dealing with this incident. If you have any questions please call me at (815) 485-6161.

Sincerely,
Stan A. Huber Consultants, Inc.

Glenn Huber
Radiation Safety Specialist

cc: Jerry Kettle, Sheet Products RSC

Stan A. Huber Consultants, Inc.
Health Physics and Radiation Safety Services

200 North Cedar Road - New Lenox, Illinois 60451-1751 - (800) 383-0468 or (815) 485-6161 - FAX (815) 485-4433 - Email sahci@aol.com - Home Page www.sahci.com

Nuclear Gauge Survey Form

Licensee (Customer) Name: U.S.S. Gary Works

Radioactive Material License # General License: NDS (VALMET) #GA 458-3G

One North Broadway	Gary	Indiana	46402
Address	*City*	State	*Zip*

Contact Person: Jerry Kettle **Phone:** (219) 888-2846

Gauge Manufacturer: NDS

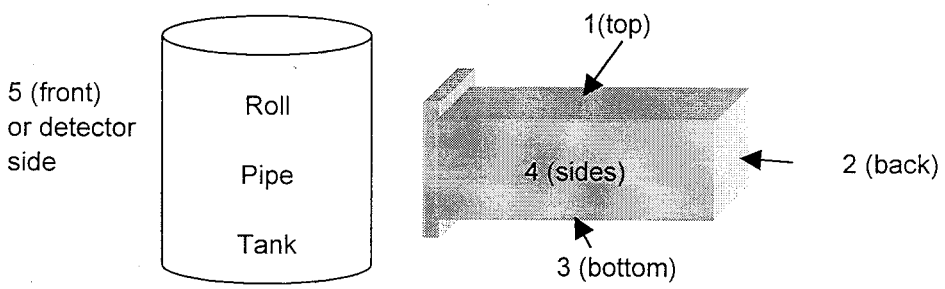
Model # 200 *Serial #* 2061B *Isotope:* Am-241 *Activity* 2.001 Ci

	yes	no
Leak Test Performed	X	
Shutter Operation OK	closed	
Radiation Tags OK	X	
Gauge Condition OK	X	
Gauge Locked - Closed	no manual	shutter

Location: #6 Line East Galvanize

Survey Instruments used to Perform Survey:

Manufacturer:	Eberline	*Model:*	RO-2	(ionchamber)	*Serial Number:*	562
Manufacturer:	Ludlum	*Model:*	14C	(G-M)	*Serial Number:*	114750



maximum ion chamber reading: 1.6mR/hr

Closed Shutter Readings

	Surface mR/hr	@ 1 Foot mR/hr
1 Top	0.2	0.18
2 Back	0.4	0.12
3 Bottom	0.6	0.4
4 Sides	0.4	0.2
5 Front	2	0.2

Open Shutter Readings

	Surface mR/hr	@ 1 Foot mR/hr
1 Top	n/a	n/a
2 Back	n/a	n/a
3 Bottom	n/a	n/a
4 Sides	n/a	n/a
5 Front	n/a	n/a

Comments: No open shutter readings were taken because gauges were locked out. This survey was taken after the gauge was knocked off of its track (Emergency Response). See report dated 2/25/00 for more info.

Survey Performed By: GAH **Date:** 2/25/00

STAN A. HUBER CONSULTANTS, INC.

200 NORTH CEDAR ROAD -- NEW LENOX IL 60451-1751 -- PHONE 815-485-6161

SEALED GAMMA/BETA SOURCES - LEAK TEST CERTIFICATE

REPORT DATE: 2/25/00

FACILITY: USS GARY WORKS
GARY IN

NRC LICENSE NUMBER: NDS General License
STATE LICENSE NUMBER:

SOURCE IDENTIFICATION:

RADIONUCLIDE:	Am-241
ACTIVITY:	2.001 Ci
CALIBR. DATE:	"not provided"
MANUFACTURER:	NDS
MODEL NUMBER:	200
SERIAL NUMBER:	2061B
OTHER DESCRIPTION:	#6 Galv Line - Emergency Response Call

ASSAY RESULTS:

COUNTING EFFICIENCY:	0.846
BACKGROUND AT TIME OF ASSAY:	67

	MAX CPM	NET CPM	DPM	ACTIVITY uCi
WET WIPE	66	0	0	< 0.000001
DRY WIPE	75	8	9	0.000004

ANALYSIS PERFORMED USING:
Packard Auto-Gamma Scintillation Spectrometer Model #D5003 Serial #406282 AND/OR
Packard 1900CA Tri-Carb Liquid Scintillation Analyzer Model #A1900 Serial #101464

ANALYSIS OF RESULTS:
Sources are not leaking at this time
Removable contamination is less than 5E-3 uCi. (.005)

NEXT LEAK TEST DUE: As Regularly Scheduled

LEAK TEST PERFORMED BY: Glenn Huber DATE: 2/25/00

ANALYSIS PERFORMED BY: S A HUBER CONSULTANTS INC. DATE: 2/25/00

RADIATION SAFETY OFFICER SIGNATURE: _____